

REMARKS

This is an amendment with request for continued examination filed under 37 C.F.R. 1.114 in response to the final Office Action dated May 16, 2007.

I. CLAIM CHANGES

Method claims 17 to 31, which were rejected under 35 U.S.C. 112 and under 35 U.S.C. 103 (a), have been canceled.

New method claims 32 to 42 include subject matter from the canceled claims, but also contain additional limitations to overcome the rejections based on the prior art. New method claims 32 to 42 have also been drafted to overcome the rejections under 35 U.S.C. 112.

New independent method claim 32 for a method of making a small container includes limitations taken from canceled claims 17 to 20. Wording taken from the preamble of claim 17 has been shifted to the body of the new claim 32 so that it will be given weight during examination. Wording changes have been made to overcome the 112 rejections, which are based on the disclosure in the last paragraph on page 4 and on page 2, lines 9 to 15, of the applicants' originally filed specification. Also the bottom recited in claim 32 has been limited to a closed bottom. This change is supported by the disclosure in

the first paragraph on page 5 and the first paragraph on page 8 of the applicants' originally filed specification, where it states that the bottom, which was formed during the thermally cutting to length, is thermally opened.

New dependent method claim 33 is a new dependent claim that further limits the source of the contamination that the method is designed to reduce or eliminate. New dependent method claim 33 is based on the explicit wording on page 2, lines 9 to 15, of the applicants' originally filed specification.

New dependent method claims 34 contains the subject matter of canceled claim 21 but the wording of this subject matter has selected to avoid rejections under 35 U.S.C. 112.

New dependent method claim 35 limits the container made by the method to a bottle or an ampoule. New claim 35 is based on subject matter that was originally in canceled independent method claim 17.

New independent method claim 36 for a method of making a small container contains the subject matter of canceled independent method claim 22 and also the subject matter of canceled dependent method claims 23 to 24, which include additional steps of preferred embodiments. The disclosures related to the embodiment of fig. 1 in applicants' specification support this method claim 36.

New dependent method claim 37 is similar to dependent claim 33 and has a similar basis in applicants' specification. New dependent claim 38 includes the features of canceled dependent claim 25. New dependent claim 39 is similar to claim 35 and has a similar basis, i.e. from canceled claim 22.

New independent method claim 40 is a claim for a method of at least reducing contamination due to release of alkali compounds that is based on canceled independent claim 26 and dependent claim 28.

New dependent method claim 41 includes the features of canceled claims 30 and 31.

New independent method claim 42 is also a claim for a method of at least reducing contamination due to release of alkali compounds. It is a claim that is based on canceled independent claim 26 and dependent claim 27.

The details of the claim wording changes made to overcome the rejections based on 35 U.S.C. 112, first and second paragraphs, will be explained in more detail in the following sections.

II. REJECTION OF CLAIMS UNDER 35 U.S.C. 112, 1ST ¶

Claims 17 to 31 were rejected under 35 U.S.C. 112, first paragraph, for failing to comply with the written description requirement.

Claims 17 to 31 have been canceled, obviating their rejection on this ground. However new claims 32 to 42 contain similar subject matter as canceled claims 17 to 31, but the wording of the new claims 32 to 42 has been chosen so that it is fully supported by the wording in the originally filed specification.

Specifically the independent method claims 32, 36, 40 and 42 each states that the hollow glass tube *releases* at least one alkali compound during thermal processing of the hollow glass tube. This wording is supported by the disclosure

on page 4, lines 11 to 13, and page 4, lines 18 to 22, of applicants' originally filed specification.

In addition, the connection between the contamination and release of the alkali compound or compounds is explained in the first two paragraphs on page 2 of the background section of applicants' specification. The released vapors containing the alkali compound or compounds are deposited on the inner surface of the container during the prior art methods for making the container. The applicants' inventive methods correct or reduce this problematic deposition to some extent. The disclosure in the last paragraph on page 9 of applicants' specification provides some comparative evidence showing that the amount of Na₂O released from the glass tube inner surfaces when the container is made with the applicants' method is about 54 % less than when it is made by the methods of the prior art.

Claims 33 and 37 include more details regarding the manner in which the at least one alkali compound is released from the inner surface of the hollow glass tube, which details are taken from page 2, second paragraph, of applicants' originally filed specification.

Also the step b of "heating the lower end of the glass tube" and the term "lower end" have been deleted when drafting the new independent method claims because that step is confusing and unnecessary. When the small container is made, the vertically clamped hollow glass tube is divided into two sections by "thermally cutting to length". The lower of the two sections is discarded or used to make another container latter according to the first

paragraph on page 8 of applicants' specification. Since the "lower end" is on the discarded or later-used lower section, it is not involved in the method of making the small container from the upper section that is clamped and held in a vertical orientation. The bottom of the upper section of the vertically clamped hollow glass tube is closed when the hollow glass tube is cut to length to form the container, which is the basis for step b) of the new independent claims 33, 36 and 42. Then the bottom is thermally opened according to step c) of these claims. The first paragraphs on pages 5 and 8 of applicants' specification and of course canceled claims 19, 20, 23 and 24 support the introduction of these two steps into the independent claims for making the small container.

The wording "constricting a gas flow path through said open upper end during said thermal processing" in step d) of claim 32 and step c) of claim 40 is fully supported by the wording on page 9, line 6, of the originally filed specification.

For the foregoing reasons it is respectfully submitted that claims 32 to 42 should not be rejected under 35 U.S.C. 112, first paragraph, for failing to comply with the written description requirement.

III. REJECTION OF CLAIMS UNDER 35 U.S.C. 112, 2nd ¶

Claims 17 to 25 and 30 to 31 were rejected under 35 U.S.C. 112, second paragraph, for indefiniteness.

Claims 17 to 31 were canceled, obviating their rejection for indefiniteness.

However new claims 32 to 42 contain similar subject matter as canceled claims 17 to 31, but the wording of the new claims 32 to 42 has been selected to avoid indefiniteness rejections.

Claims 32 and 36 do not include the phrase beginning “such as”, which made the scope of canceled claims 17 and 22 indefinite or confusing. The subject matter in this phrase was included in dependent claims 33 and 37.

Claims 19, 23 and 30 were unclear regarding the manner in which the bottom is formed “at the lower end” because the difference between the bottom and the lower end was not clear. Also it was not clear on which tube the bottom was formed. This was explained in section II regarding the rejection under 35 U.S.C. 112, first paragraph.

Each of independent method claims 32 and 36 claim a method of making a small glass container. These new independent claims no longer include the step of heating the lower end of the hollow glass tube that is claimed in the vertical orientation, because the lower end of the hollow glass tube is on a lower section that is discarded after the “thermally cutting to length”. Instead the steps of “thermally cutting to length” to form a “closed bottom” and opening the closed bottom by heating is included in these main claims. It is not even necessary to mention the “lower end” in these independent claims because it is on part of the tube that is discarded during the process of making the small glass container (i.e. the first container mentioned on page 8, first paragraph, of applicants’ specification). The end of the hollow glass tube that is processed to form the container mouth is described as the “bottom” in these independent claims and in

the specification.

As far as the closing of the bottom, one skilled in the art would understand that when the tube is thermally cut to length by heating with a jet flame or torch, the walls of the glass tube end collapse to form a closed bottom. The step of thermally cutting to length has been amended to state that the result is a closed bottom. Therefore an additional step of “closing” the bottom is not necessary. The cutting to length is in fact that step.

For the foregoing reasons it is respectfully submitted that claims 32 to 42 should not be rejected under 35 U.S.C. 112, second paragraph, for indefiniteness.

IV. OBVIOUSNESS REJECTIONS

1. Ritt and Bennet alone

Claims 17 and 19 to 21 were rejected as obvious under 35 U.S.C. 103 (a) over Ritt, et al, in view of Bennett, et al.

Claims 17 and 19 to 21 were canceled, obviating their rejection on these grounds.

Since new method of making a small glass container claim 32 includes the features and limitations of claims 17 and 18 as well as 19 to 21, claim 32 and the claims that depend on claim 32 cannot be rejected on these grounds.

For the foregoing reasons it is respectfully submitted that claims 32 to 35

should not be rejected as obvious under 35 U.S.C. 103 (a) over Ritt, et al, in view of Bennett, et al.

2. Ritt, et al; and Bennet, et al; in view of Schul or Mueller, et al

Claims 22 to 28 and 30 to 31 were rejected as obvious under 35 U.S.C. 103 (a) over Ritt, et al, in view of Bennett, et al, and in further view of Schul or Mueller, et al.

New independent method claim 36 includes limitations from canceled method claims 22, 23, and 24. New independent method claim 42 includes limitations from canceled method claims 26 and 27. New independent method claim 40 includes limitations from canceled method claims 26 and 28.

It is respectfully submitted that the subject matter of claims 36 to 42 is not *prima facie* obvious under 35 U.S.C. 103 (a) from a combination of the disclosures of Ritt, et al, in view of Bennett, et al, and in further view of Schul or Mueller, et al.

Ritt, et al, does disclose various steps in thermally processing glass tubes to make small glass containers.

Bennett, et al, (US '535) does disclose a method of making glass jet injector ampoules from an aluminosilicate glass containing alkali metal cations. However Bennett, et al, does not disclose or suggest that contamination of an inner surface of the glass tube (or resulting container) due to deposition of alkali metal compounds can be reduced or avoided by any means (as stated on page

5, lines 12 to 14, of the final Office Action). Bennett, et al, do not even disclose the problem of deposition of alkali metal compounds on glass surfaces during thermal processing of glass containing alkali metal cations.

Bennett, et al, in contrast, is concerned with the problem of strengthening glass ampoules that are made from an aluminosilicate glass that contains alkali metal cations. The compressive strength of the glass used to make the ampoules is increased when alkali metal cations of a larger size (higher atomic) replace the alkali metal cations of a smaller size in the glass material (see column 2, lines 19 to 47, of US '535). This replacement can be carried out by an ion exchange process as described for example on page 4, lines 62, and following of US '535 (Bennett, et al).

Furthermore increasing the strength of an aluminosilicate glass by ion exchange of alkali cations is not simply related to the problem of preventing or reducing evaporation of alkali metal cations from the glass during thermal processing. The amount of surface contamination due to thermal processing would depend largely on the wt. percentages of the alkali cations in the glass composition and the parameters of the thermal processing. The exchange of one alkali cation for another would seemingly have only a secondary effect because the total number of alkali metal cations present in the glass is not changed. One skilled in the art would not be able to predict that the ion exchange process described in columns 2 to 4 US '535 would provide an ampoule with less inner surface contamination due to evaporation of alkali compounds during thermal processing. There is certainly no teaching or suggestion in US '535 that that

would be the situation.

Thus it is respectfully submitted that the combination of Ritt, et al, and Bennett, et al, do not suggest a method of making a glass container with reduced inner surface contamination by alkali compounds as stated on page 5 of the final Office Action.

Schul and Mueller do **not** suggest the modifications of Ritt, et al, and Bennett, et al, that are necessary to arrive at the invention as claimed in the new claims 36 to 42. Schul does produce an overpressure at column 2, lines 65 to 68, but does not mention the use of a stopper for that purpose. Mueller does teach closing one end of a hollow body being thermally processed with a stopper 23, but the stopper 23 does not include a through-going hole and is not for the purpose of partially closing the end of the hollow body while producing an overpressure, as claimed in applicants' claim 40. Instead plug 23 is used to maintain the shape and size of the rim and opening 66 of the end of the glass tube while heating to shape that end for joining with another tube of smaller diameter (column 6, lines 34 to 47). The plug 23 is **not** disclosed as having a through-going opening, which is not necessary according to Mueller, but which would be necessary to produce a partial closing of the opening.

Thus the subject matter claims 40 and 41 are clearly not disclosed or suggested by a combination of Schul or Mueller, et al, with the two main references, Ritt and Bennett, et al, because Schul or Mueller, et al, never disclose or suggest the partial closing of the opening at one end of the hollow glass tube, only the complete closing and for a purpose that is unrelated to

applicants' object.

The overpressures produced in the hollow glass tubes in the disclosures of Schul and Mueller, et al, are for an entirely different purpose, namely from pressing the thermally process glass tube against a form, according to column 3, lines 6 to 14, of Schul and according to column 9, lines 34 to 39 in Mueller, et al.

Thus neither Schul nor Mueller, et al, mention the problem of contamination of the inner surface of the tube with deposits of alkali metal compounds released from the glass during thermal processing. They certainly neither disclose nor suggest the solution of the problem, which is to provide the overpressure in the glass tube. Note that the amended claims 40 and 42 both specifically state that the contamination due to alkali metal compound deposition is reduced because of the overpressure as shown for example by the comparative experiments described on page 9 of applicants' specification.

Finally, Ritt, et al; Schul and Mueller, et al, do **not** disclose or suggest the step of "blowing gas or air" into the hollow glass tube to produce the overpressure, as claimed in steps d) of method claims 36 and 42. Typically pressured metal cylinders containing air or gas are used to produce overpressures in hollow glass bodies during thermal processing because a regulator valve on the tank can be used to easily adjust the overpressure.

Ritt, et al; Schul, and Mueller, et al, do **not** disclose a mechanical device to produce the overpressure, such as a blower or fan.

For the foregoing reasons it is respectfully submitted that claims 36 to 42 should **not** be rejected as obvious under 35 U.S.C. 103 (a) over Ritt, et al, in

view of Bennett, et al, and in further view of Schul or Mueller, et al.

**3. Ritt, et al; and Bennet, et al; in view of Schul or Mueller, et al,
and further in view of Leber, et al**

Claims 18 and 29 were rejected as obvious under 35 U.S.C. 103 (a) over Ritt, et al, in view of Bennett, et al, and in further view of Schul or Mueller, et al, and further in view of Leber, et al.

New independent method claim 32 includes the limitations of canceled claims 17 and 18. New independent claim 40 includes limitations from canceled claim 29.

Leber, et al, discloses processing a hollow body of vitreous material, such as glass, by closing one end by heating and closing the other end with a stopper with a tube passing through it, which is used to evacuate the interior of the tube. Leber, et al, does not disclose or suggest producing an overpressure in the glass tube by heating the glass tube when a stopper with a through-going hole or passage is placed in one end of the glass tube and the other end of the glass tube is closed.

It is well to remember that method claims are at issue, not apparatus claims. The fact that the applicants' novel method employs some components or parts that are well known in the glass arts does not imply anything regarding the patentability of the novel method.

How does drawing a vacuum in a closed tube through a stopper in one end of the tube make using a stopper with a through-going hole in it that

produces a constriction in a gas flow path obvious? These seem to be the opposite from each other!

It is well established that for a valid rejection under 35 U.S.C. 103 (a) based on a combination of cited prior art references there must be a suggestion in the art to combine the subject matter of the references in the suggested manner to arrive at the claimed invention; the suggestion cannot come from the applicants' specification. For example, the Federal Circuit Court of Appeals has said:

"The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. ... It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fritch*, 23 U.S.P.Q. 2nd 1780, 1783-84 (Fed. Cir. 1992).

In the present case Leber, et al, hardly suggests providing the overpressure with a stopper that has a through-going hole. Leber, et al, do suggest the modifications of Ritt, et al, and the other references including Bennett, et al, that are necessary to arrive at the subject matter of claims 32 to 35 or claims 40 and 41 *without the disclosures in the applicants' specification as a guide to pick and chose features from the references*. The latter procedure is not permitted under 35 U.S.C. 103 (a).

For the foregoing reasons it is respectfully submitted that new claims 32 to 35 and 40 and 41 should **not** be rejected under 35 U.S.C. 103 (a) over Ritt, et

al, in view of Bennett, et al, and in further view of Schul or Mueller, et al, and further in view of Leber, et al.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,



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